

Project pedagogy—Interpretations and background principles

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Abstract: Educational processes, methods and teaching-learning strategies based on activities, which are tangibly useful in real life have become of great concern since the appearance of reform-pedagogical approaches. The project method as a concept in educational history has undergone continuous changes and reinterpretations. This study aims at summarizing the most important characteristics of project pedagogy and reinforcing the justification of this very methodology in the 21st century on all levels of education having considered background principles.

Key words: project pedagogy; teaching-learning strategies; activity-centeredness; problem based learning; portfolio-approach

1. Introduction

Concepts like project-oriented activity, project approach, project method, project pedagogy, pedagogical project, project-based learning, project-based approach, project work, project task and project process, present how varied the terminology of this field is and show the results of the attempts to make definitions and the diversity of expressions presented in the international special literature. Pedagogical project is sometimes considered as an educational method, methodological tool (Putt, 1982), learning-teaching strategy (Hegedus, 2005) as well as pedagogical interaction type. The reason for this terminological diversity lies partially within the differences manifested in historical and pedagogical reinterpretations and partially in transformations. Besides interpretations appearing in the special curricula of institutions following reform and alternative pedagogical directions, those appearing in framework curricula and extra-curricular programs (like creative camp) are making the picture of pedagogical project—still being formed—even more shaded. The educational work taking place in higher education has also discovered and has applied the expression “project” in more senses (Judith Howard, 2002). “Project” is an identifier of activities coming into existence in a given period of time and resulting in a product due to international co-operations or tenders, furthermore, their methodology often applied is the project method. This concept is considered their own by several specialties and fields of science (e.g., project management) also, its language which is used widely in everyday makes it even more difficult to give a notional explanation of. Hortobágyi had already attracted attention to the exhaustion of the concept in the pedagogical sense:

... everything that is not a formal lesson makes its way into the catalogue of methods as a project; every form is called a project as a result of which a common product is made with the active participation of learners. (Hortobágyi, 2002, p. 7)

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The project method is a concept of educational history, its root is connected to Kilpatrick, and it has become internationally accepted. Project pedagogy is a duality of a theoretical and a practical model, whereas project education is the didactical approach of it. In the attempts to make definitions, it can be noted, regardless to specialty, that definitions include the factors of result and that of the process or both are taken into account. In the following, the common elements of the 21st century project-pedagogy are becoming determinative based on 9 project-definitions.

2. Pedagogical and non-pedagogical definitions

Unique process which is a coordinated and controlled group of activities contracted to achieve defined objectives—concerning specific requirements including the limits in terms of quality, cost and resources with specified starting and finishing dates. Definition according to ISO (International Organization for Standardization).

Project is defined as:

... a temporary endeavor undertaken to produce a unique product, service, or result. (PMI, 2004, p. 5)

The definitions about pedagogical are:

Wholehearted purposeful activity carried out in a social environment. (Kilpatrick, 1918)

Projects are intensive, personal experiences which preoccupy learners. They manifest through activities of interest and are important for our studies. They involve community elements, often end with a product or exhibition which serve a real aim. A typical project lasts for 2 to 8 weeks. Project ideas can be brought up either by teachers or learners individually or in groups. Further persons, mentors can be involved in them. Experiencing can also take place outside of school building that is what makes project-work special. (Fleming, 2000)

An interdisciplinary instructional strategy that engages learners in complex, real-world projects and experiences as the context for teaching and learning. (National Association for Interpretation—NAI) (Definitions Project)

Project is a special study unit, in the centre of which there is a problem. The task is not simply to solve or choose/select the problem, but also to unfold as many relations and connections as possible, which in the real world are closely linked to that certain problem. (Hortobagyi, 1991, p. 5)

Pedagogical project is a complex, creative cognitive-proceeding unit ... realistic or simulated (modeled) process of making a “real” (material or intellectual) product ... cooperation of teachers and learners as partners ... a means to differentiate. (Hortobagyi, 2002, pp. 8, 10, 13, 15)

Projectwork is a set of activities circumspectly designed, with learners thoroughly discussed which is aiming at activating more skills; it is taking place in cooperative, creative surroundings with the objective to create a tangible product of real function in the real world. This tangible product of real function in the real world is the project itself. (Poor, 2001, p. 107)

A project is an extended piece of work on a particular topic where the content and the presentation are determined principally by the learners. (Hutchinson, 1991, p. 10)

3. The highlighted characteristics of projects

The project method enables the parallel forming and improvement of the three main general competences (cognitive, social and personal) as well as other special competences based on the syllabus of the project to be applied at any levels of education. Competences are the main motives in selecting and arranging the curricular

contents, however, besides cognitive and practical abilities, motivational factors, abilities, emotional elements, social- and behavioral features are also making their effects. From the definitions mentioned above, plus, from the Hungarian and international special literature (Hortobágyi, 2002; Jacobson, McDuff & Monroe, 2006; Markham, et al., 2003; Smet & Gaeremynck, 2004) focusing on the theory and practice of the project method, the determining characteristics are the following:

- (1) Complex (multi-, interdisciplinary), planned activity taking place in a context, learning based on action considering values;
- (2) Enables the application and tryout of the knowledge, and abilities which have been acquired (or are to be acquired) during the activity in practice;
- (3) Creative process (set of activities) for the sake of given (educational) aims—with temporal definiteness and phases;
- (4) Characterized by problem-centeredness, improving problem-solving skills;
- (5) Mostly resulting in a tangible, material or intellectual product, which is taking place along defined, real pedagogical aims;
- (6) Takes so far experiences into account, constructs and develops (differentiates) them further;
- (7) Builds on community, interpersonal relations and cooperation;
- (8) Presumes intrinsic motivation, positive individual intention and empathy; personal giving receptive and creative experience are distinctive elements of it;
- (9) Loosens, respectively, partially or totally breaks up with frames of subject-lesson-classroom;
- (10) Presumes a planned learning environment, with deliberate pedagogical roles, includes reflection, the different forms of assessment and feedback into the process.

4. Background principles

Having created the pre-definition of the project method by listing the features, it can be stated that it includes the pedagogical aims considered to be modern in the 21st century. It builds on so-called background principles which are at the same time bases for pedagogical approaches. For instance, interdisciplinary approach of subjects, learning based on actions and activities, humanistic, personality-centered pedagogical attempts, cooperative learning, pedagogical constructivism, learning based on discovering and problems, reflective pedagogy, portfolio-approach and competence-centeredness. Going into details concerning the most important ones, the evolving picture turns out to be extremely complex, it makes the reasons for the diverse interpretations of the concept of project visible and its feature of integrating different approaches and principles.

The interdisciplinary approach of subjects attempts to rebuild the system of relations of the world torn into subject pieces in the school environment for learners. The exploration of relations between different fields and that of problem-intersections and their integration for pedagogical purposes presumes on one hand curricular (planning) questions of integration, on the other hand, a change of methodological approach in the pedagogue's activity. It is not by coincidence that the definitions of curriculum enhancing orientations, among which the cross-curricular as well as different curricular levels (supra-, macro-, mezo-, micro- and nano-levels) serve the same aim (Jos Letschert, 2005). Interdisciplinary approach is also a methodological question: methods, processes and techniques which can be implemented by common topics, the pedagogue using the specific language of more subjects.

The activity-centeredness is the next issue which continuously serves as a subject to pedagogical thinking. Pukanszky mentions Rousseau's "developing the stage" concerning the interpretations of the idea of child of the 18th century as a forerunner of the 20th century project.

Using today's term, Emil solves a problematic situation when he escapes a tight corner by his knowledge As if he was solving a 20th century project he applies his knowledge and overcomes the situation. For the first sight, it is an astonishingly modern process far proceeding its age: project pedagogy in the forest. (Pukanszky, 2005, p. 70)

Knowledge applicable to solve problems also appears in paradigms aiming at ability and personality development as well as developing the so-called complex cognitive structures. The adaptability of knowledge (viability) is a basic issue of the constructivist learning theory, where the cognitive person is permanently measuring and testing how he/she could apply his/her knowledge in different contexts in different situations.

The PBL (problem-based learning) is a problem-based interactive teaching method. Problem-centeredness itself can be interpreted as a pedagogical synthesis, in which cooperative techniques, research-like discovery learning, common knowledge-construction and motivational features of learning are also apparent. As opposed to teacher-centeredness, learner-centeredness is emphasized, traditional teacher roles are transformed, and realistic learning environment also represents this direction as the project method itself. It is also interpreted in the literature as a syllabus constructing approach (where experiences get into focus), as an educational method, a developing-learning-organizational technique, and it is evaluated as a means to establish and develop a critical and analyzing, creative way of thinking. Its start and origin is connected to the name of McMaster University (Canada) and in the middle of 1960s, it initiated changes in medical education (Barrows, 1984; Barrows & Tamblyn, 1980), since then it has spread in several varieties all over the world. The emphasis is not placed upon practicing the acquired knowledge. Knowledge that is necessary to the solution of the problem is not available when the problem is composed. Analyzing, searching for individual (community) ideas, collecting possible suggestions for solution are the starting points, which are set up on the basis of existing knowledge. The stage at which learning aims become conscious, the information having searched for are selected and systematized, by which the solving of the problem takes place. The common and determining element of research being done on the application of PBL at various levels of education is providing suitable learning environment. By comparing certain PBL variations, the nature of the problem, the personality features of learners and the abilities of the tutor are significant in the respect of the activity (Gijsselaers & Schmidt, 1990). These days e-PBL can also be mentioned which, besides traditional methods, involves the opportunities of IT and makes presentation and problem solving possible in a digital environment. In his work, McConnell highlights that: The starting point is a previously defined task transmitted through the course book or by the teacher. Learners acquire knowledge and abilities through problems, which are presented in phases, built on each other and of given context, in these the curriculum and the support of the teacher play an important role. This is a shorter process and suits curricular directions better. It is primarily applied in adult education (in e-learning groups), where the problem is placed in the focus of the learning process (McConnell, 2002).

The teacher- and learner-centered as well as approaches built on curriculum or project are represented and compared (see Table 1, in the dimension of higher education) in a research report of a 2006 project-oriented program built on information technologies (VO@NET—Virtual Open-Access Network for Education and Training, 2006).

Table 1 Pedagogical approaches

	Curriculum oriented	Project oriented
Learner-centered	Individual learning, portfolio, group work	Projects, case-based work, PBL, POPP (Problem-Oriented Project Pedagogy)
Teacher-centered	Lectures, courses, seminars	Laboratory experiment, assigned tasks, problem-solving, PBL

In the three dimensions of PBL (problem, work process and its organization, solution), the key point is who poses, possesses and organizes the dimensions. If it is the teacher, the students or other participants who pose the problem, manage and control the work-process, choose the theoretical, empirical and practical ways which result in the solution of the problem.

The project method presumes a diversely planned learning environment, to which the elements of feedback, reflection and evaluation are also connected. On this sub-field, portfolio-approach can appear or be linked to the project technique. This is a way of behavior related to learning, which assumes purposeful practical activities, respectively, which is based on it. The ordinary meaning of the word portfolio is briefcase. It has long been applied and used even today in various fields, from finance to architecture and arts. It is a folder of documents, which in the pedagogical sense is a representative, purposeful and systematized collection of the works of the students.

A portfolio is a purposeful collection of student work that exhibits the student's efforts, progress and achievements in one or more areas. The collection must include student participation in selecting contents; the criteria for selection, the criteria for judging merit, and evidence of student self-reflection. (Paulson, Paulson & Meyer, 1991, p. 60)

Regarding the aims of the portfolio, firstly, it makes evaluation possible, secondly, it helps and makes learning conscious (Susan Belgrad - Kay Burke - Robin Fogarty, 2008). Instead of teaching, it places learning into focus, presents and documents the achievements of the learning process the different stages of development, it makes individual learning possible and can insure the contact between the participants of education. The maker of the portfolio plans systemizes and evaluates their own knowledge. Due to the extensive nature of interpreting portfolios, digital and other audio-visual documents can also be included in them. Depending on the aim, it has several varieties. Among its basic types, individual-, classroom- and demonstrative portfolios, additionally, work- and assessment portfolios are mentioned in the literature, which can be divided further depending on the educational objective.

The portfolio-approach supports more learning and teaching purposes, thus always serving different methodological function (Hacker, T., 2004). Regarding the project method, one of the most significant issues is the evaluation of improved knowledge and ability elements which had come into existence during the process of the project. Therefore, it can appear as a possible means of evaluation in project pedagogy, which turns out to be more than this function. It becomes a tool that supports learning, furthermore, enables not only the product (the result) of the series of activities but also the process to be documented. The process and the product, as the two stressed elements of the project method, appear in the portfolio-approach as two basic types. Hence, that the type of project-portfolio exists, it is not by accident. It documents the process of a project materializing and the role of students played in the project. While applying the project-portfolio, the features defined in terms of the project method are still valid: activity-centeredness, interdisciplinary approach of subjects, different interaction types, methods and processes. Its integration into the learning and project process, the phases of its construction, the

tasks of the teacher is summarized in the following Table 2.

Table 2 The process of project- and portfolio methods tasks of mentor and generative assessment

Stages of preparation		Tasks of the pedagogue in both cases	
Project	Portfolio		
Choosing a theme	Setting the aim	Generative assessment; Monitoring Continuous feedback	Defining the aim and initiating the defining of the aim
Planning			Planning and initiating planning; Ensuring time limit; Raising resources (information and tools); Managing conciliations, facilitating agreements
Data collection	Collecting material		Handling conflicts; Advising; Coordinating learner activities; Assessment
Processing the theme	Selection		
Compilation of product	Reflection		
Assessment	Assessment/giving direction		
Presenting the product			Capitalizing project-product

Source: Translated from Bandine-Golube-Poor-Poor (2007): *Projektfolyamatok a gyermekkori nyelvpedagogiában* (Project Processes in Childhood Language Pedagogy), Tanarok Európai Egyesülete (European Association of Teachers—TEE), Veszprem, p. 86.

The products made during the project, after a selection based on common decisions, can be included in the portfolio depicting the particular group's work.

5. Conclusion

The methods, approaches mentioned above have become elements of pedagogical aims and criteria of the project method among more. They are partly former to it, partially as an impact of it (reform pedagogical approaches, PBL), they have become directly or indirectly independent approaches. They denote separate fields of research having their own literary background and methodological alternatives even today. The common pedagogical principles, i.e., activity-centeredness, interdisciplinary approach, focus on the learning process, the determinate teacher roles, at times appear synthesized as “features” also during project processes. All these are made more and more complex by permanent pedagogical reinterpretations, in which original definitions and added reinterpretations are barely separable. Thus, the reasons for this diversity are clear to see, which interprets a method, strategy and work form differently, yet, pedagogically authentically.

References:

- Barrows, H. S. & Tamblyn, R. M. (1980). *Problem-based learning*. New York, NY: Springer Press.
- Barrows, H. S. (1984). A specific, problem-based, self-directed learning method designed to teach medical problem-solving skills, self-learning skills and enhance knowledge retention and recall. In: Schmidt, H. G. & Volder, M. L. (Eds.). *Tutorials in problem-based learning*. Assen: Van Gorcum.
- Bela Pukanszky. (2005). *The child in the Hungarian handbooks of education of 19th century*. School Culture Press.
- Fleming, D. S. (2000). *A teacher's guide to project-based learning*. Charleston, West Virginia: AEL.
- Gijsselaers, W. H. & Schmidt, H. G. (1990). The development and evaluation of a casual model of problem-based learning. In: Nooman, Z., Schmidt, H. G. & Ezzat, E. (Eds.). *Innovation in medical education: An evaluation of its present status*. New York, Springer Publishing Company, 95-113.
- Hacker, T. (2004). Portfolios in learning projects. *FORUM School Foundation*, 14(41), 3-20.

- Hegedus Gabor. (2005). Project-pedagogy in education: Interpretation of project-pedagogy in Hungary. *Research and Development*, 5, 305-317. Pedagogical College, Krems, S.
- Hutchinson, T. (1991). *Introduction to project work*. Oxford: Oxford University Press.
- Jos Letschert. (2005, Dec. 7-9). Curriculum development re-invented. Proceedings of the *Invitational Conference on the Occasion of 30 Years SLO 1975-2005*, Leiden, the Netherlands, 7-9 December, 2005.
- Judith, Howard. (2002). Technology-enhanced project-based learning in teacher education: Addressing the goals of transfer. *Journal of Technology and Teacher Education*, 10.
- Katalin Hortobagyi. (1991, 2002). Handbook of projects. *Altern Booklets*, 1(10). NIPE National Institute for Public Education, Centre for School Improvement and Integration Foundation, Budapest.
- Kilpatrick, W. H. (1918). The project method. *Teachers College Record*, 19, 319-335.
- McConnell, D. (2002). Action research and distributed problem-based learning in continuing professional education. *Distance Education*, 23(1), 59-83.
- Paulson, F. L., Paulson, P. R. & Meyer, C. (1991). What makes a portfolio a portfolio? *Educational Leadership*, 48(5), 60-63.
- Project Management Institute. (2004). *A guide to the project management body of knowledge (PMBOK®Guide)*. Project Management Institute, 2004.
- Putt, H. (1982). *Project-teaching and plan-design*. Essen: New German School.
- Susan Belgrad, Kay Burke & Robin Fogarty. (2008). *The portfolio connection: Student work linked to standards*. Corwin Press.
- Susan K. Jacobson, Mallory, D., McDuff & Martha, C., Monroe. (2006). *Conservation education and outreach techniques*. Oxford University Press, 224-229.
- Thom Markham, John Larmer & Jason Ravitz. (2003). *Project based learning handbook: A guide to standards-focused project based learning for middle and high school students*. Buck Inst for Education (2nd Rev Spl ed.).
- Smet, V. De & Gaeremynck, V. (2003, Sep. 3-6). Project learning and active learning as instruments for stimulating multidisciplinary thinking and reflection in initial teacher education. Paper presented at the *ENSI-SEED Conference Szeged*, September 3-6, 2003. Retrieved from <ftp://ftp.oki.hu/english/seed-case-Verlee-paper.pdf>.
- VO@NET (Virtual Open-access network for education and training—Enhancing interconnectivity between European and Asian universities). (2006). Conceptual pedagogical framework, final report, Aalborg University, March 2006. Prepared by Thomas, Ryberg, Lone, Dirckinck-Holmfeld, Brian, Møller, Svendsen, and contributions from Laura, Zurita, Ian, Semey, Marianne, Georgsen & Stefan, Knold, E-Learning Lab, Aalborg University. Retrieved from <http://www.ell.aau.dk/VOANET-Final-reports.304.0.html>.
- Zoltan Poor. (2001). The role of project-method in foreign language education. In: Gabor, Hegedus. (Ed.). *Project-method*. Kecskemet, 106-111.

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